



# BPM IN FINANCIAL SERVICES

## Good Advice from the Real World

Andy Bonham, Capital One

Peter Loop, Infosys

Emanuele Montrasi, SIA

Phil Simpson, Red Hat

June 30, 2016

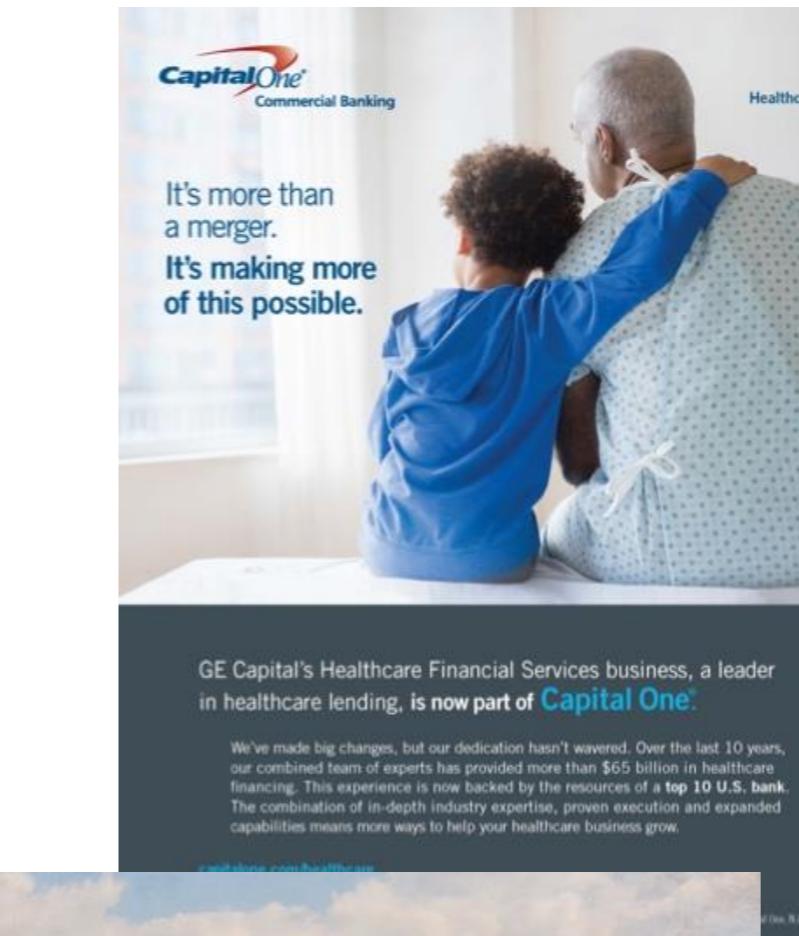


# BPM Architectures at Capital One

Andy Bonham  
Enterprise Architect, Capital One

# Capital One at a glance

- **A leading diversified bank with \$330.3 billion in assets, \$228.9 billion in loans and \$221.8 billion in deposits<sup>1</sup>**
  - 8<sup>th</sup> largest bank based on U.S. deposits<sup>2</sup>
  - 5<sup>th</sup> largest retail depository institution in metro New York<sup>3</sup>
  - Largest consumer and commercial banking institution headquartered in the Washington, DC region
  - 4<sup>th</sup> largest credit card issuer in the U.S.<sup>4</sup>
  - The 3<sup>rd</sup> largest issuer of small business Visas and MasterCards in the U.S.<sup>5</sup>
  - The 4<sup>th</sup> largest financial institution auto loan originator<sup>6</sup>
  - Largest U.S. direct bank<sup>7</sup>
- **Major operations in 15 U.S. cities, Canada, U.K.**
- **More than 65 million customer accounts and 45,000 associates**
- **A FORTUNE 500 Company - #126**
- **Numerous recent awards including:**
  - Named to 100 Best Companies to Work For by *FORTUNE* Magazine
  - Best Places to Work for LGBT Equality by *Human Rights Campaign*
  - Received J.D. Power & Associates Call Center Certification
  - Aon Hewitt's Top Companies for Leaders
  - Named to *Working Mother*'s 100 Best Companies list & Best Companies for Hourly Workers
  - Ranked #8 on *Military Times*' 2014 "Best for Vets"
  - Recipient of the Secretary of Defense Employer Support Freedom Award



# We have transformed the company into a top 10 bank



- **2015** – Acquires GE Capital's Healthcare Finance, Level Money and Monsoon
- **2014** -- Acquires Adaptive Path, a digital design leader and AmeriCommerce, an online e-commerce company
- **2013** – Acquires Beech Street Capital, an originator, underwriter and servicer of multifamily commercial real estate loans
- **2012** - Acquires ING DIRECT, HSBC US Card portfolio
- **2010** - Enters into card partnerships with Kohl's and Sony in the US and Hudson's Bay Company and Delta in Canada
- **2009** - Acquires Chevy Chase Bank in the Washington, DC area
- **2006** - Acquires North Fork Bank, one of the largest banks in the New York metro area
- **2005** - Acquires Hibernia National Bank, #1 bank in Louisiana
- **2002** - Launches its Small Business credit card
- **2000** - Introduces slogan, "What's in your wallet?"
- **1998** - Enters Auto Finance Market
- **1996** - Expands into Canada and the U.K.
- **1994** - Initial Public Offering (IPO)

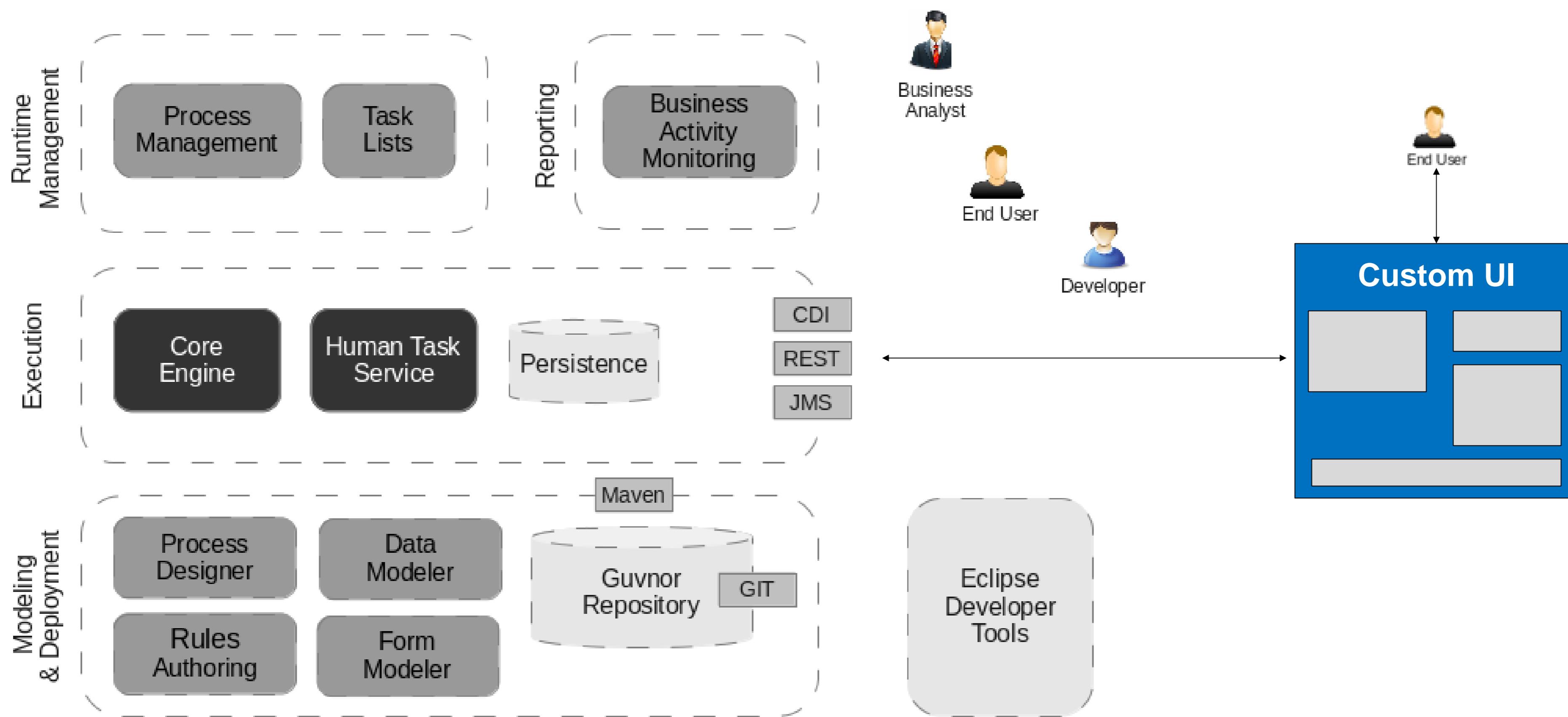
# Our focus is to recruit great people and create an environment where they can be great

- **FORTUNE World's Most Admired Companies**
- **"100 Best Companies to Work For" FORTUNE magazine** (We do not have the new logo yet)
- **"NAFE Top Companies For Executive Women"**. The National Association for Female Executives
- **"America's Top Corporations for Women's Business Enterprises"** Women's Business Enterprise National Council (WBENC)
- **"U.S. President's Volunteer Service Award"** Junior Achievement
- **"100 Healthiest Workplaces in America"** Healthiest Employers
- **"Top 125"** Training magazine
- **Top Entry Level Employer** by CollegeGrad.com
- **"Best Places to Work"** in Tampa, Dallas, Houston, Tulsa, Richmond, Chicago and Oklahoma
- **No. 1 on 2016 Information Week "Elite 100"**
- **"Best Places to Work for LGBT Equality"** The Human Rights Campaign Foundation
- **"Working Mother 60 Best Companies"** Working Mother magazine
- **Military Times' 2016 "Best for Vets"**
- **G.I. Jobs Military-Friendly Employers and Military-Friendly Spouse Employers**
- **America's Top 50 Organizations for Multicultural Business Opportunities** DiversityBusiness.com
- **"WE USA Corporations of the Year"** Women Enterprise USA
- **"Top 50 Employers"** in CAREERS & the disABLED Magazine



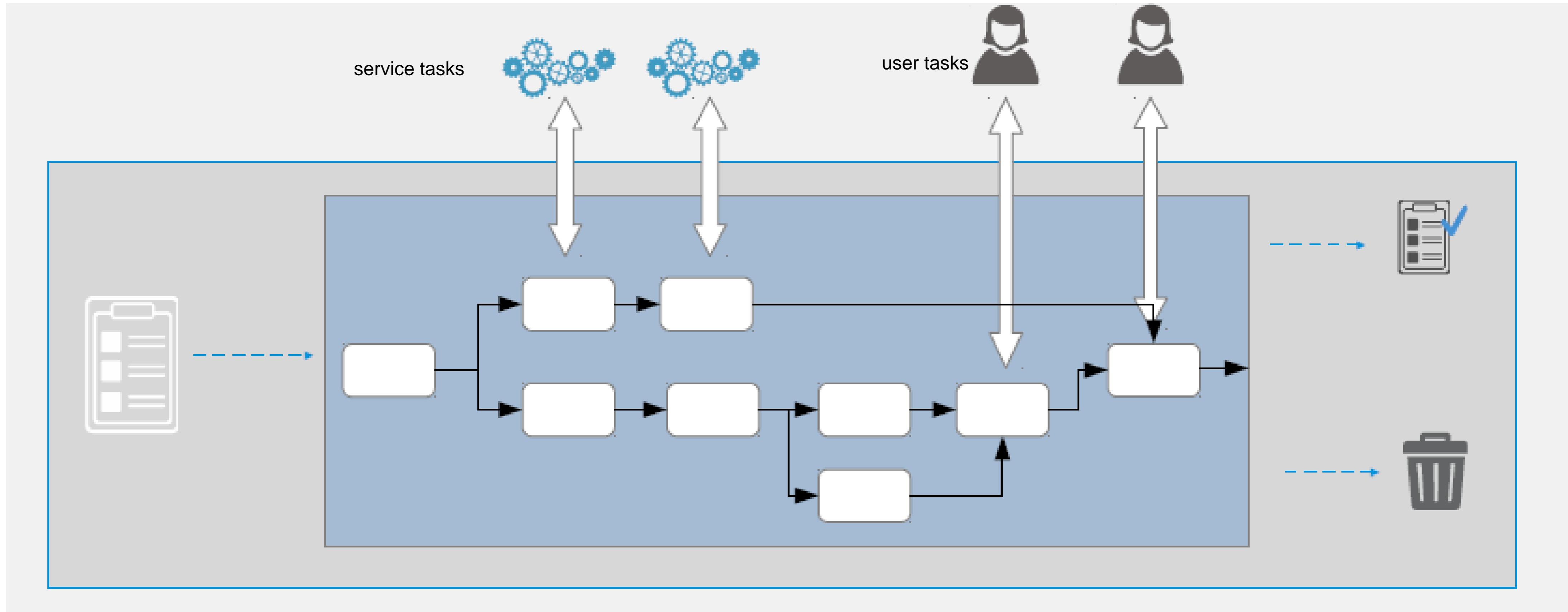
# Technical Use Case – Human Workflow with API

- Allows Custom UI to be leveraged and integrate on the backend with jBPM APIs



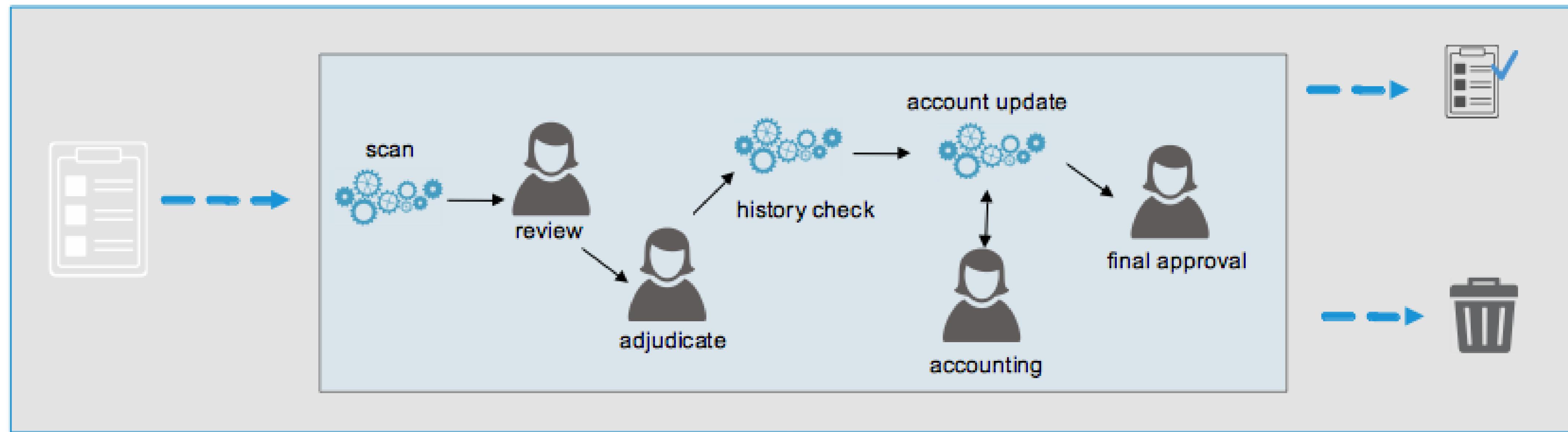
# Technical Use Case – Headless Workflow / System to System

- Automates the calling of APIs in a particular order
- Can integrate human workflow / to User Tasks as needed



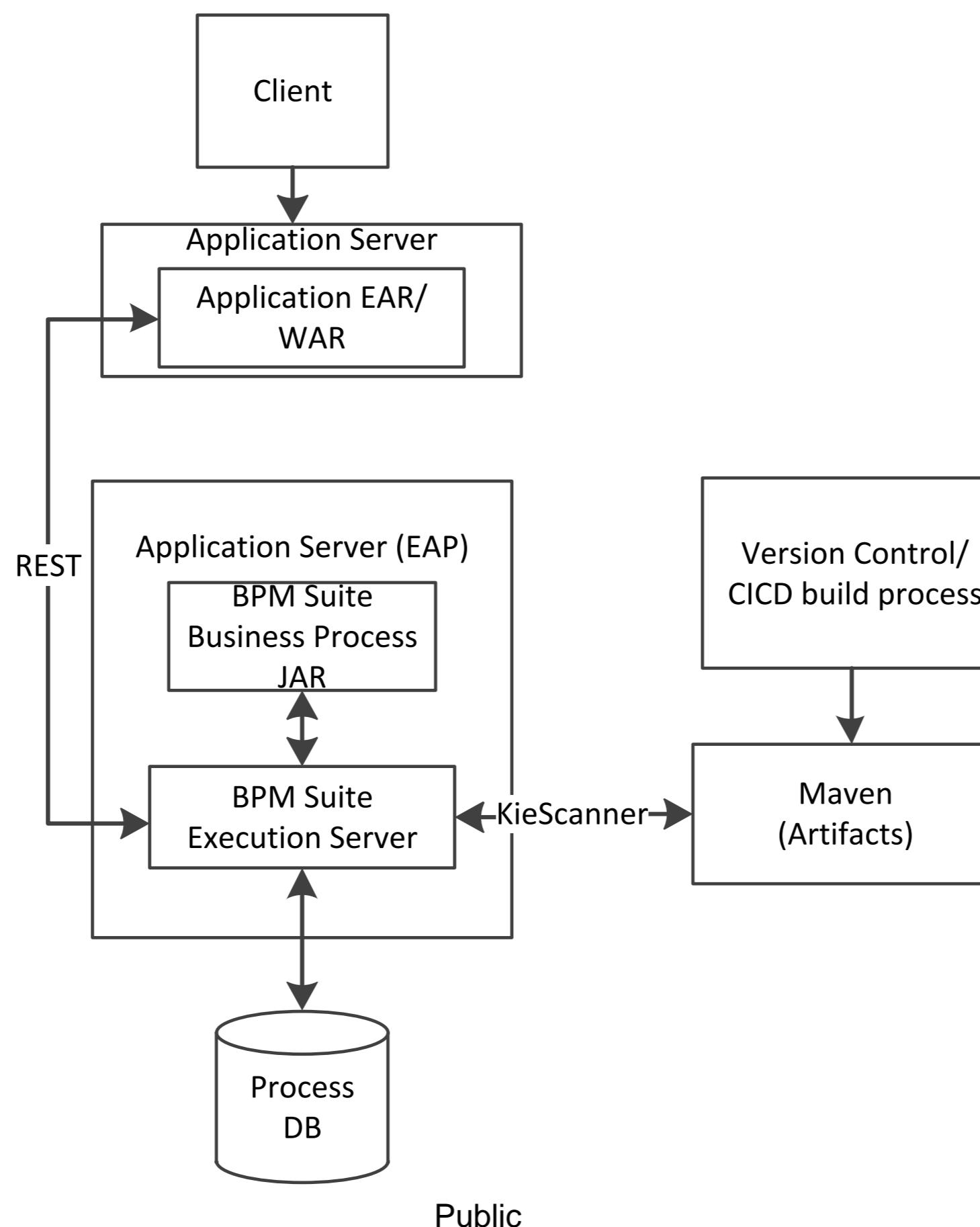
# Technical Use Case – Integrate Business Rules into a Workflow

- Ability to invoke a set of rules (RuleFlow Group) at a particular point in the workflow (Business Rules Task)



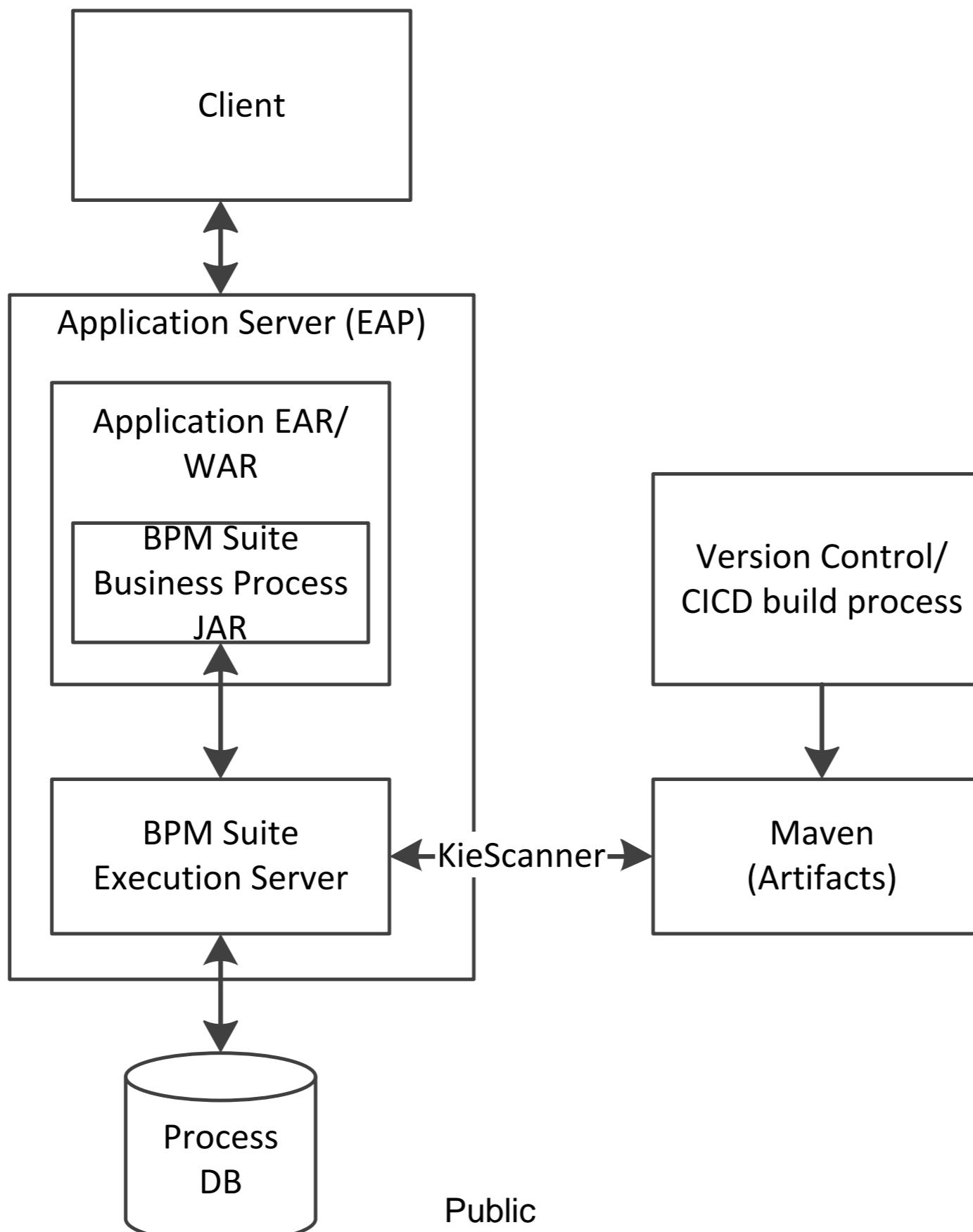
# Technical Use Case – Stand-alone deployment to keep APIs stateless

- Application can interact with it via REST, JMS, Java APIs
- Decouples the workflow and/or rules from the application
- Enables the service to be reused by multiple applications
- Is typically used for stateful, long running, async approaches (human workflow)



# Technical Use Case – Embedded deployment to add workflow to an existing application

- Runs as part of the application, under the same JVM
- Provides the best overall performance
- Can leverage all capabilities of the API
- Is typically used for stateless transactions (e.g. rules or non-stateful workflow)



# Technical Use Case – Build microservices

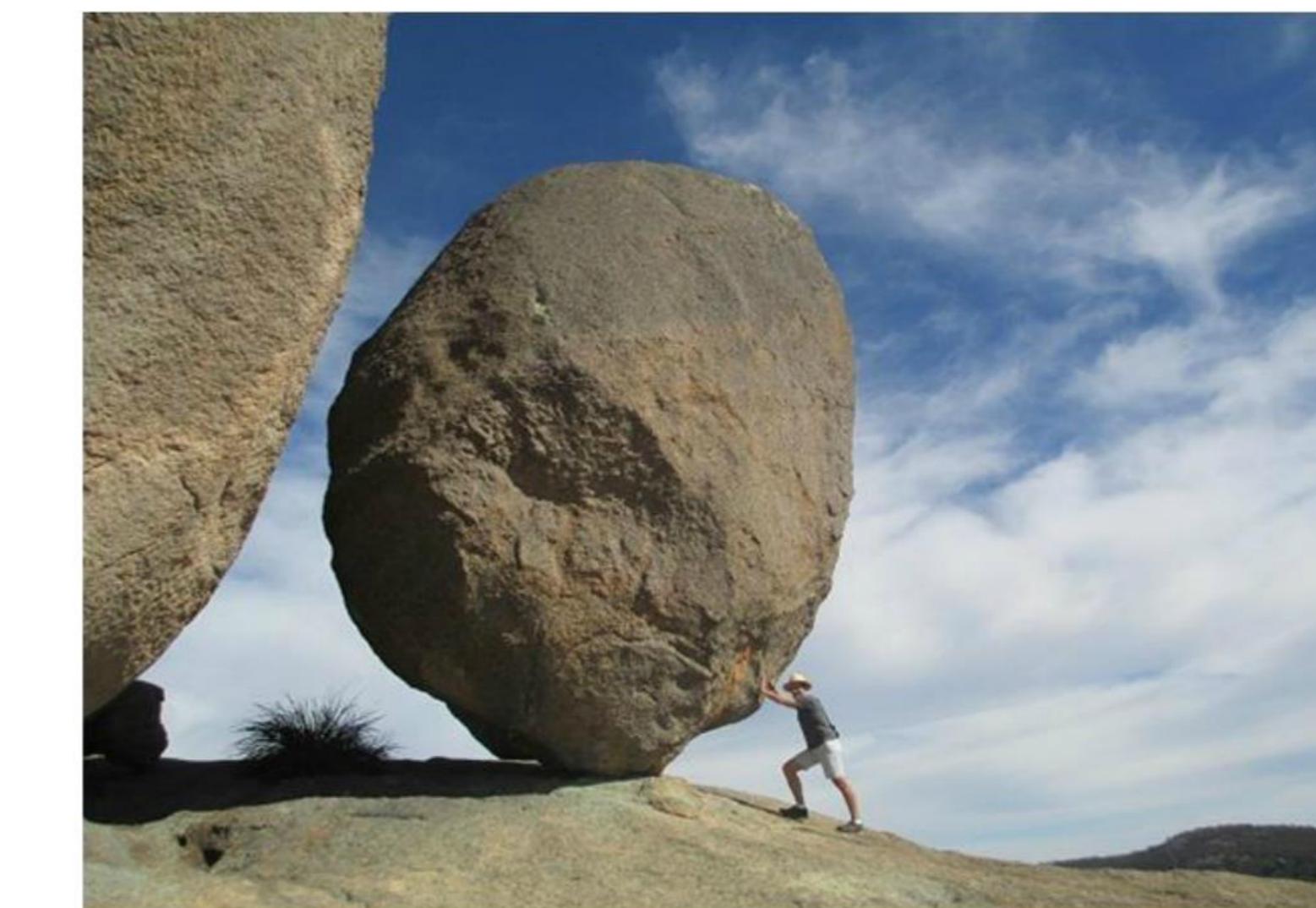
- Can leverage sub-processes to break workflows up into smaller pieces
- Avoid creating dependencies
  - Each BPM Suite microservice could have its own execution server & process database
  - Want to avoid sharing an Execution Server across microservices or microservice
- Make the interactions atomic and understand the workflow boundaries to keep the microservice stateless

Monolithic applications...

can have many dependencies



can be challenging to make a change



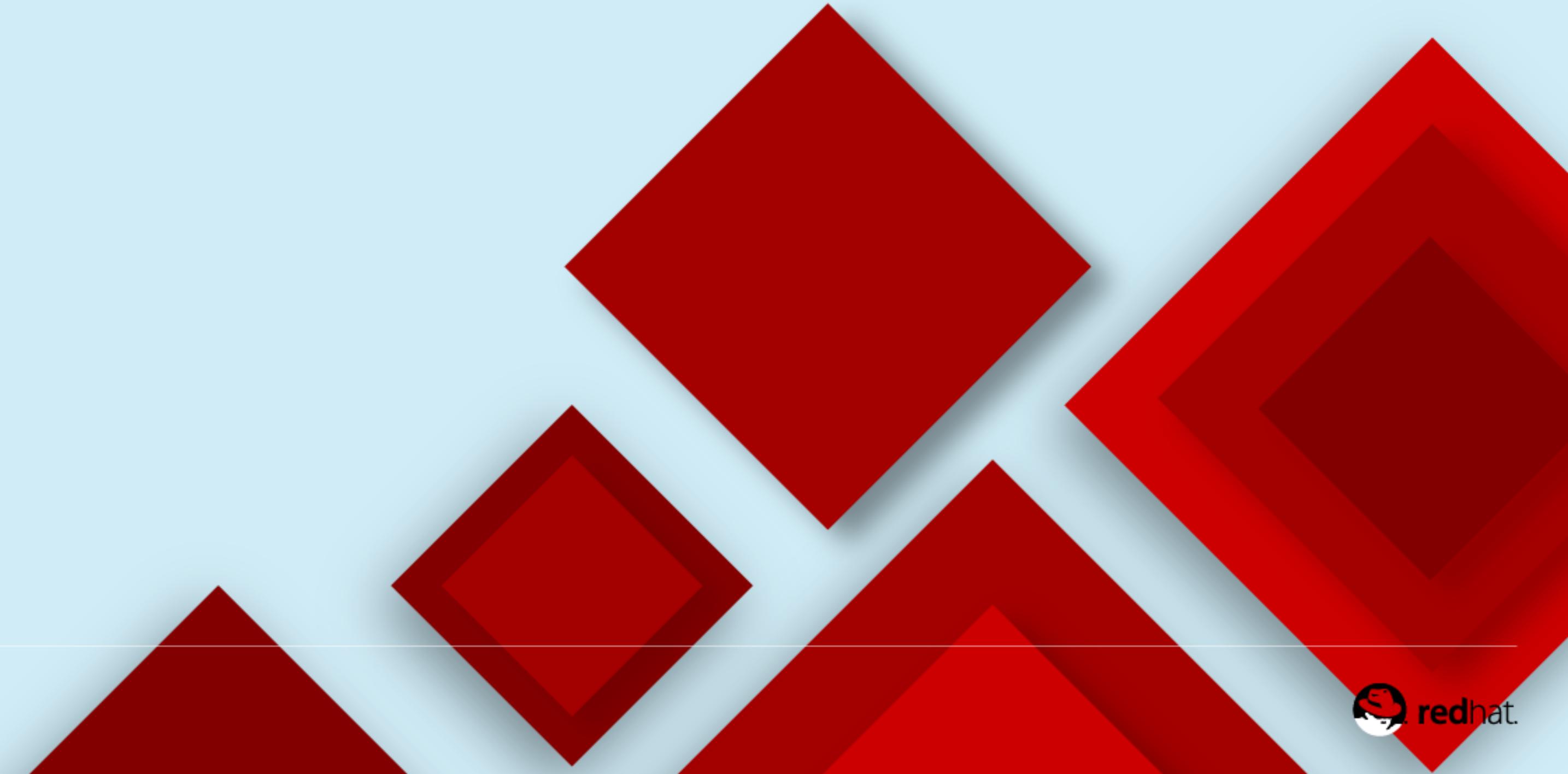
# Key Technical Lessons Learned

- **Keep the database and application service in the same geographical region**
- **Minimize the # of API calls**
- **Strive for parallel, async activities**
- **Chose the right strategy for the RuntimeManager that matches your use case**
  - Singleton - runtime manager maintains single KieSession regardless of number of processes available
  - Per Request - runtime manager delivers new KieSession for every request
  - Per Process Instance - runtime manager maintains mapping between process instance and KieSession and always provides same KieSession whenever working with given process instance
- **Build up SMEs & establish a Community of Practice**

# Finacle and Red Hat JBoss BPM Suite

Peter Loop

Associate Vice President and Principal Technology Architect  
Infosys



# Infosys - A global leader in consulting and technology

**\$9.2 billion annual revenues,  
193,000+ staff / 98 nationalities**

**1000+ clients globally**

**Offices in 40 countries & 77 cities**

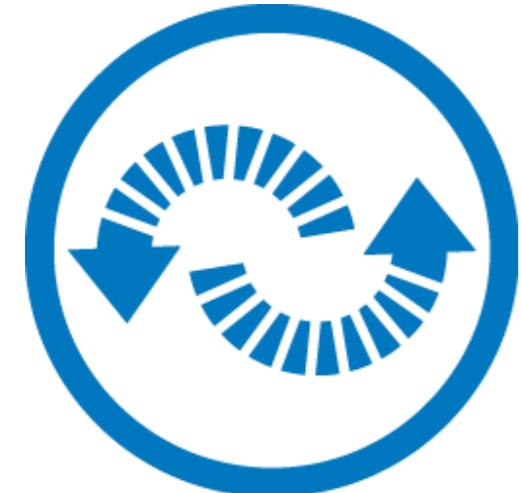


**Over 33.5 % of revenues from FSI**

**Product Subsidiary - EdgeVerve**

**Product offerings from 20+ years**

# Finacle Universal Banking Solution



## Comprehensive solution offerings -

Core banking, Internet banking, Mobile banking, Payments, CRM, Wealth management, Treasury, Origination, among others



## Global Coverage

- 84 Countries
- 480+ Installations
- Bank sizes from USD 100 Million to 1 Trillion



## Serves 16.5 percent of

world's adult banked population. Over 547 million customers access their finance through Finacle software.

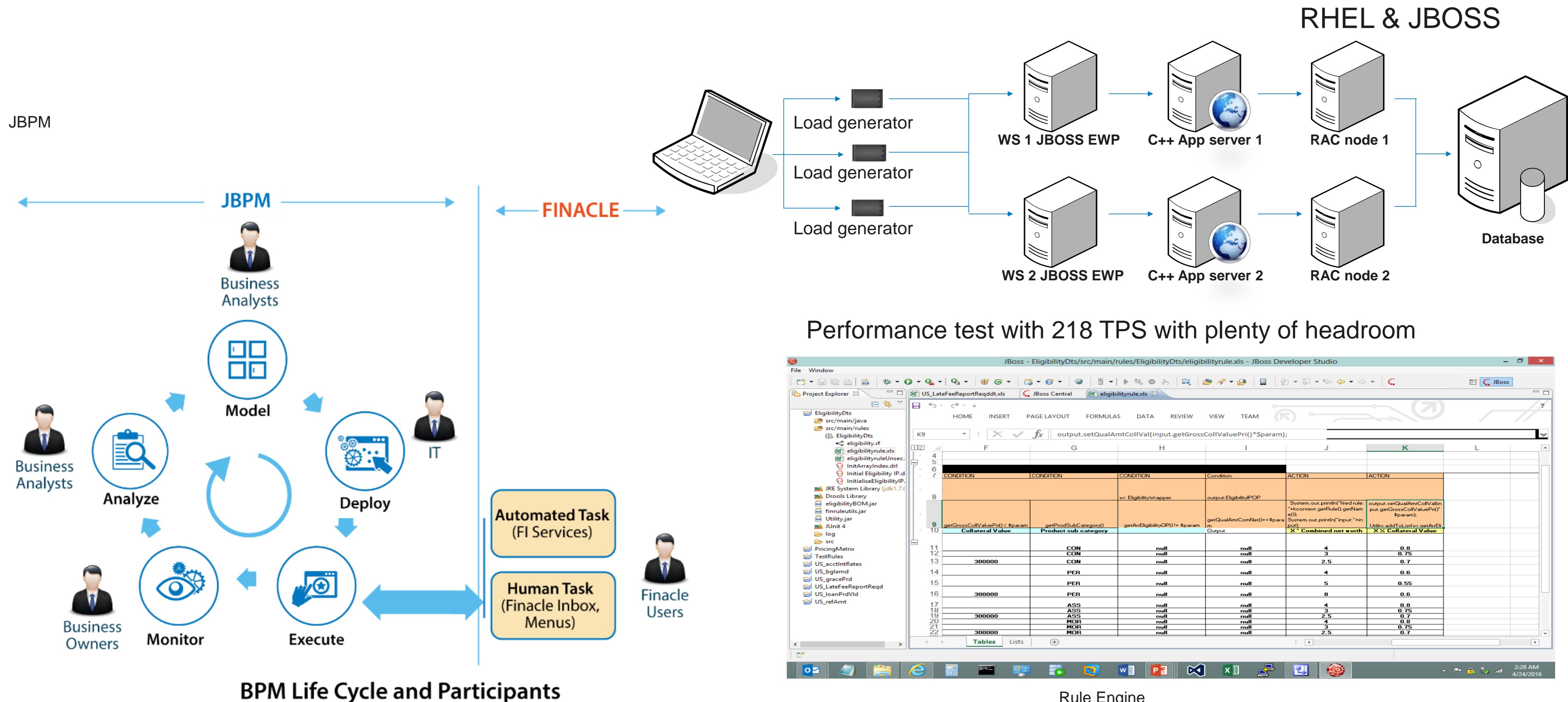


## A leader in the industry

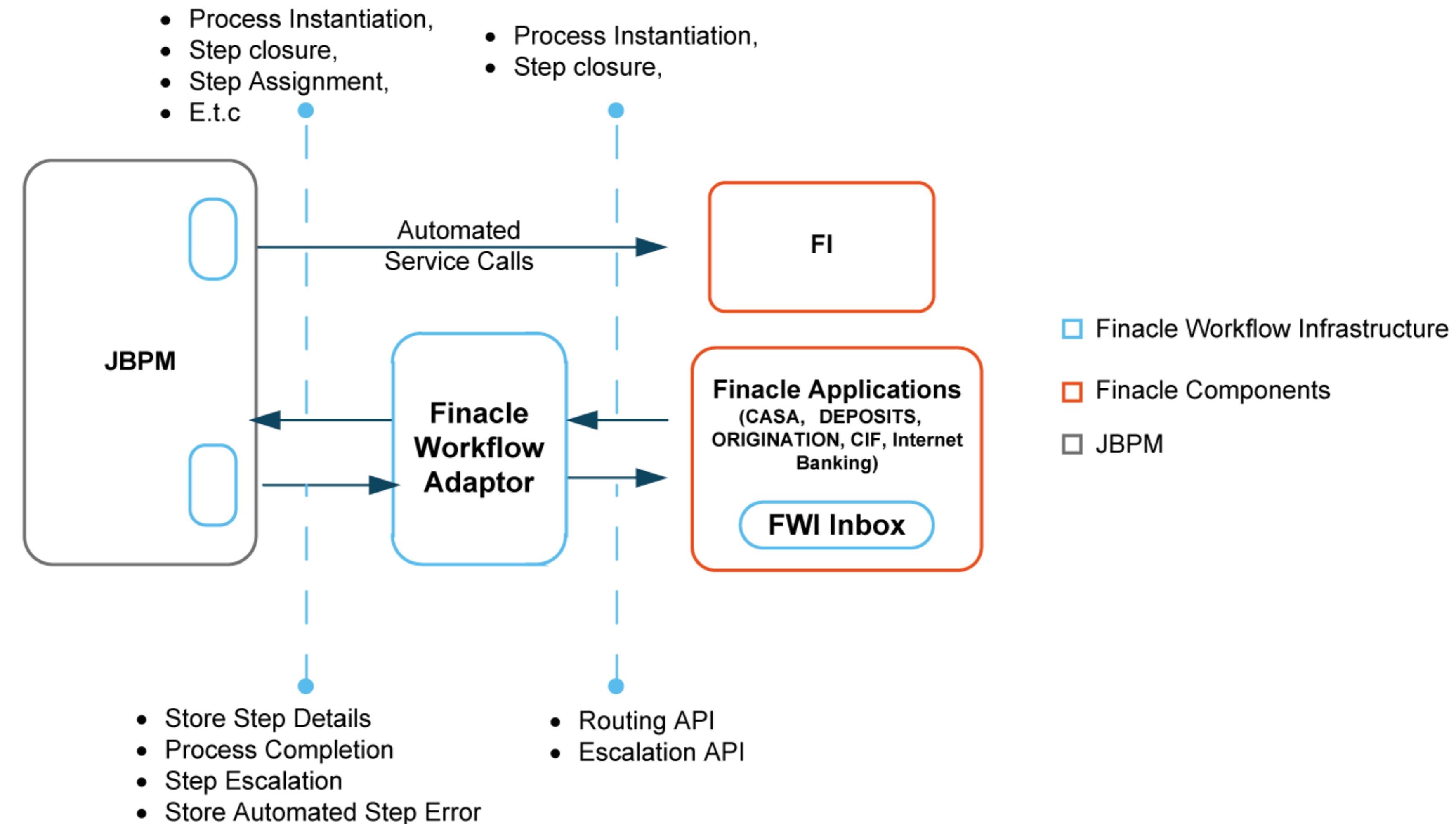
- Providing mission-critical software globally
- Proven to be most scalable platform

Infosys has been positioned as a leader in the Gartner Magic Quadrant for Global Retail Core Banking, 9 times in a row

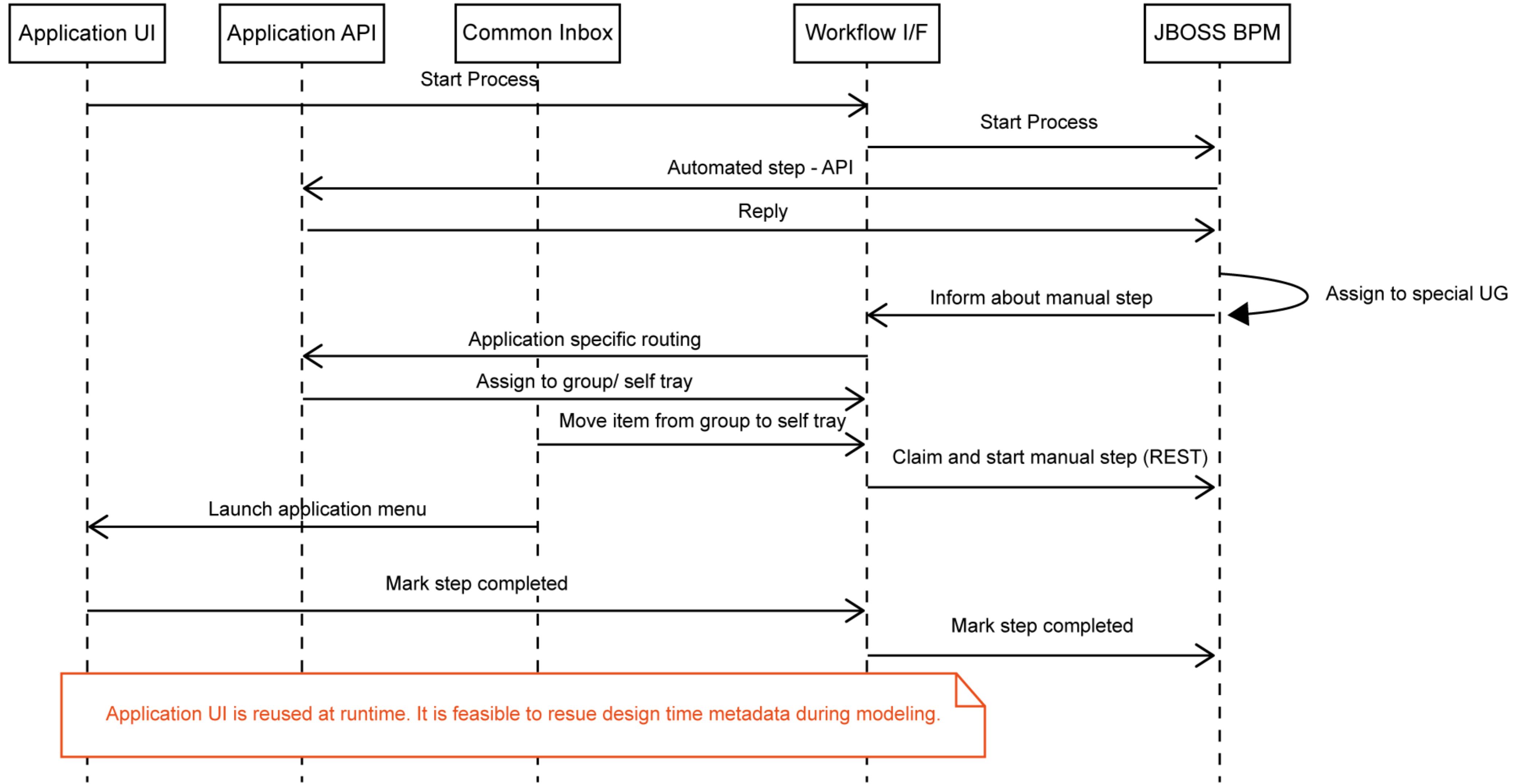
# Finacle supports multiple Red Hat products



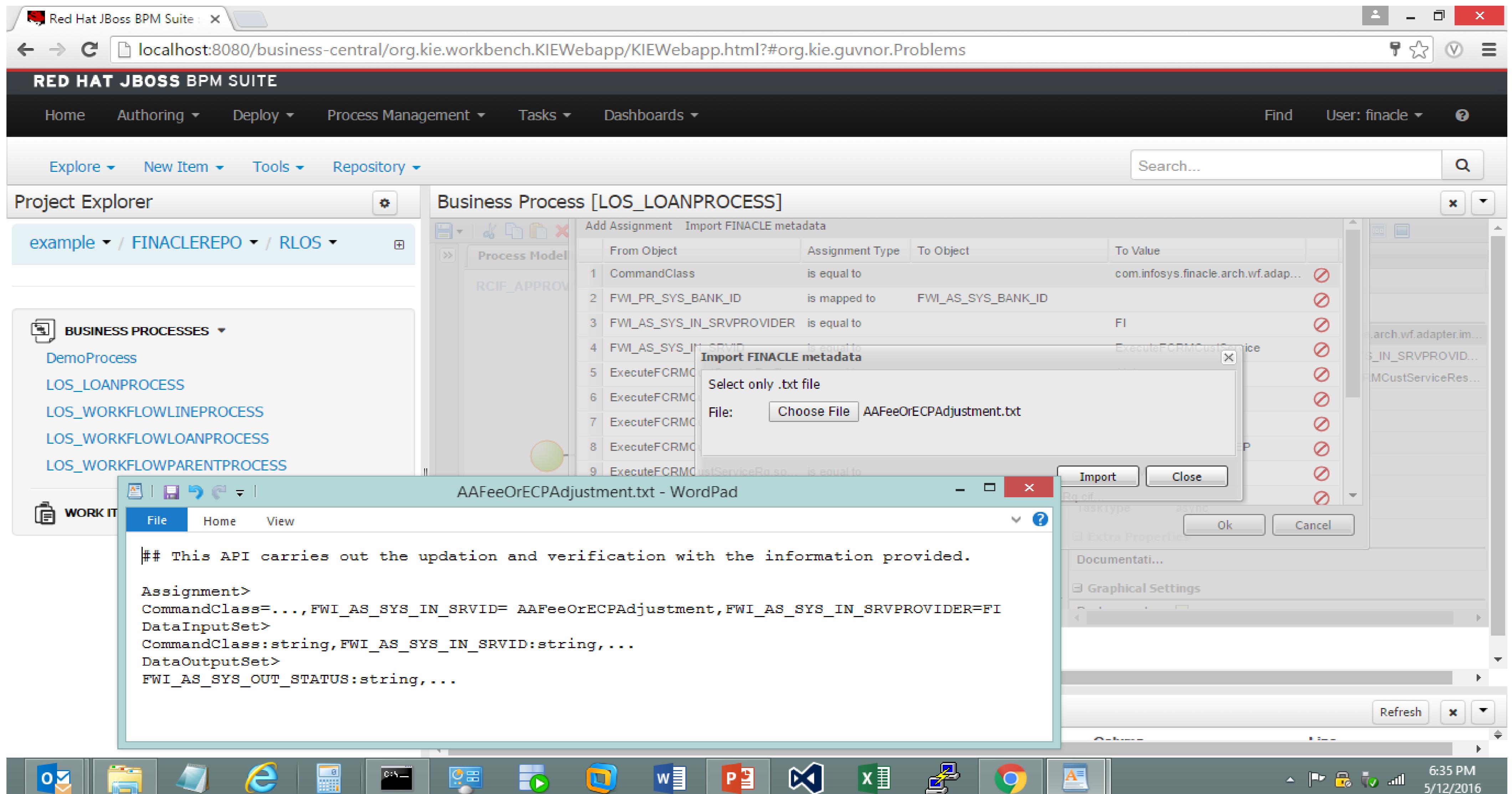
# Finacle BPM Solution – Logical Architecture



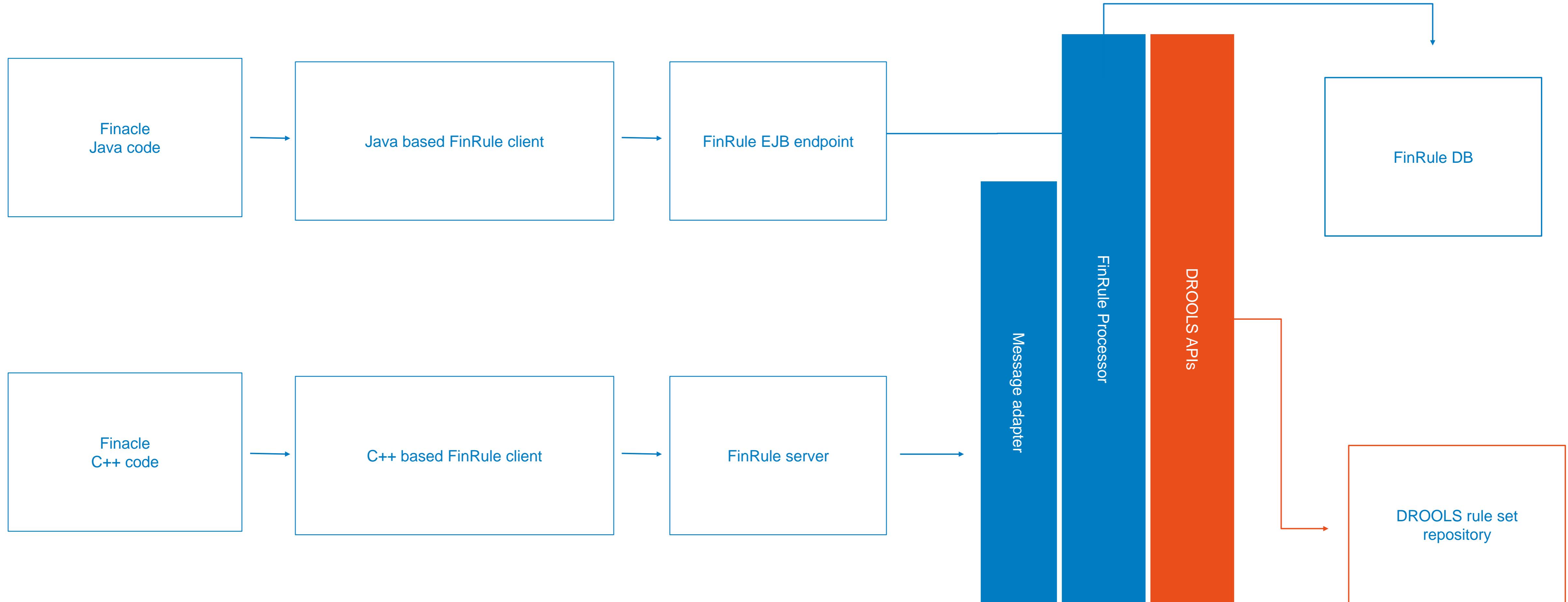
# Interface with JBOSS BPM Suite



# Import application specific metadata for actions



# Interface to Rules Engine



# Practical usage of rule engine

JBoss - EligibilityDts/src/main/rules/EligibilityDts/eligibilityrule.xls - JBoss Developer Studio

File Window

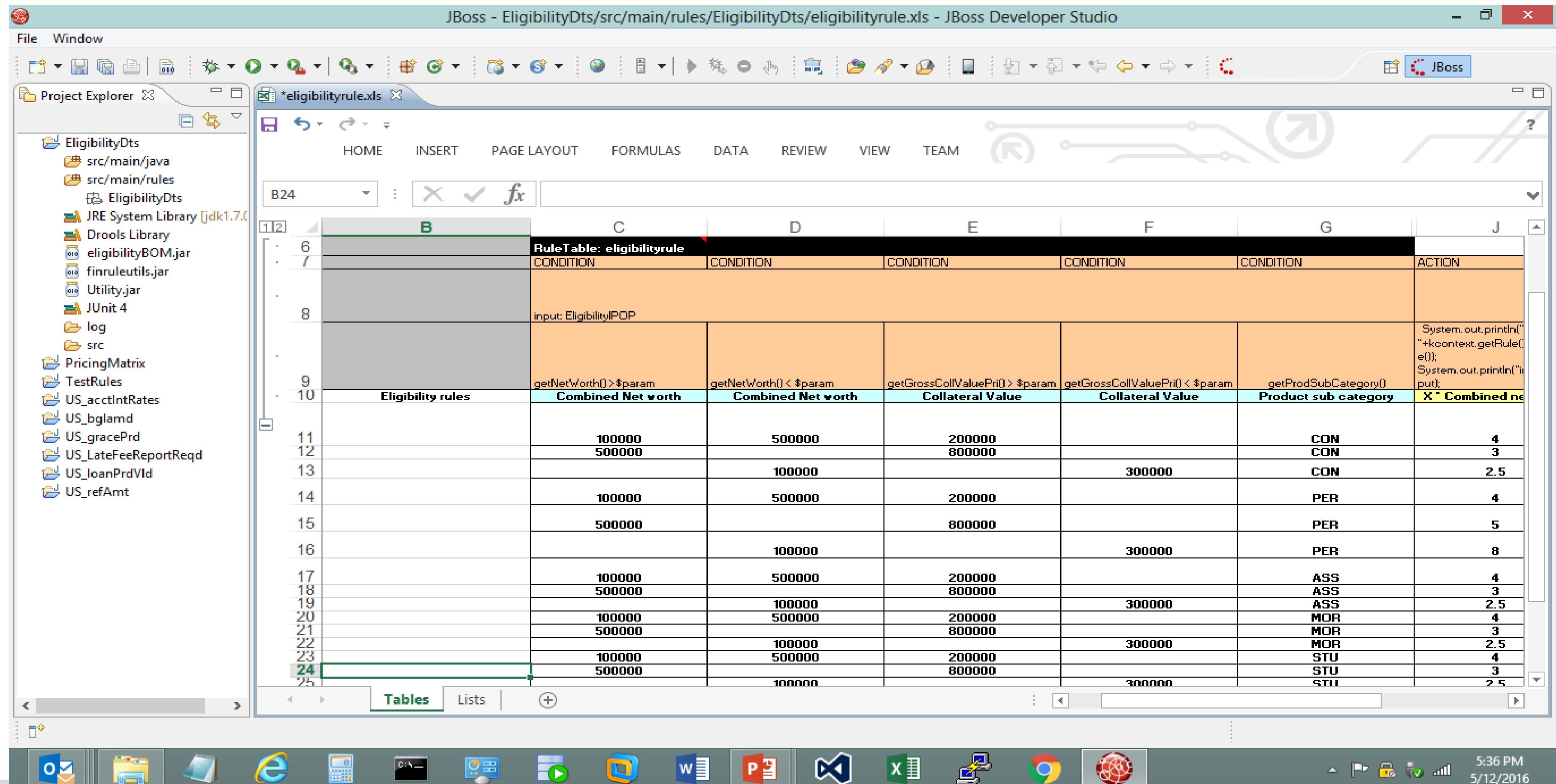
Project Explorer \*eligibilityrule.xls

HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW TEAM

B24 : X ✓ fx

	B	C	D	E	F	G	J
1	6	RuleTable: eligibilityrule	CONDITION	CONDITION	CONDITION	CONDITION	ACTION
2	7	input: EligibilityIPOP					
3	8						
4	9	getNetWorth() > \$param	getNetWorth() < \$param	getGrossCollValuePri() > \$param	getGrossCollValuePri() < \$param	getProdSubCategory()	
5	10	Eligibility rules	Combined Net worth	Combined Net worth	Collateral Value	Collateral Value	Product sub category
6	11						
7	12	100000	500000	200000			CON
8	13	500000		800000			CON
9	14		100000		300000		CON
10	15	100000	500000	200000			PER
11	16	500000		800000			PER
12	17		100000		300000		PER
13	18	100000	500000	200000			ASS
14	19	500000		800000			ASS
15	20		100000		300000		ASS
16	21	100000	500000	200000			MOR
17	22	500000		800000			MOR
18	23		100000		300000		MOR
19	24	100000	500000	200000			STU
20	25	500000		800000			STU
21			100000		300000		STU

Tables Lists



The screenshot shows the JBoss Developer Studio interface with an Excel spreadsheet titled 'eligibilityrule.xls' open. The spreadsheet contains a table named 'RuleTable: eligibilityrule' with 25 rows and 7 columns. The columns are labeled B through J. The first few rows define the table structure, including columns for conditions and actions. Rows 10 through 24 represent specific rule entries, each with a header 'Eligibility rules' and a sub-header 'Combined Net worth'. The data in these rows includes various numerical values and category names like 'CON', 'PER', 'ASS', 'MOR', and 'STU'. The bottom of the spreadsheet shows a toolbar with buttons for Tables and Lists, and the status bar at the bottom right shows the date and time as 5/12/2016 5:36 PM.

## Contact information:

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# Thank you

**@edge\_verve**

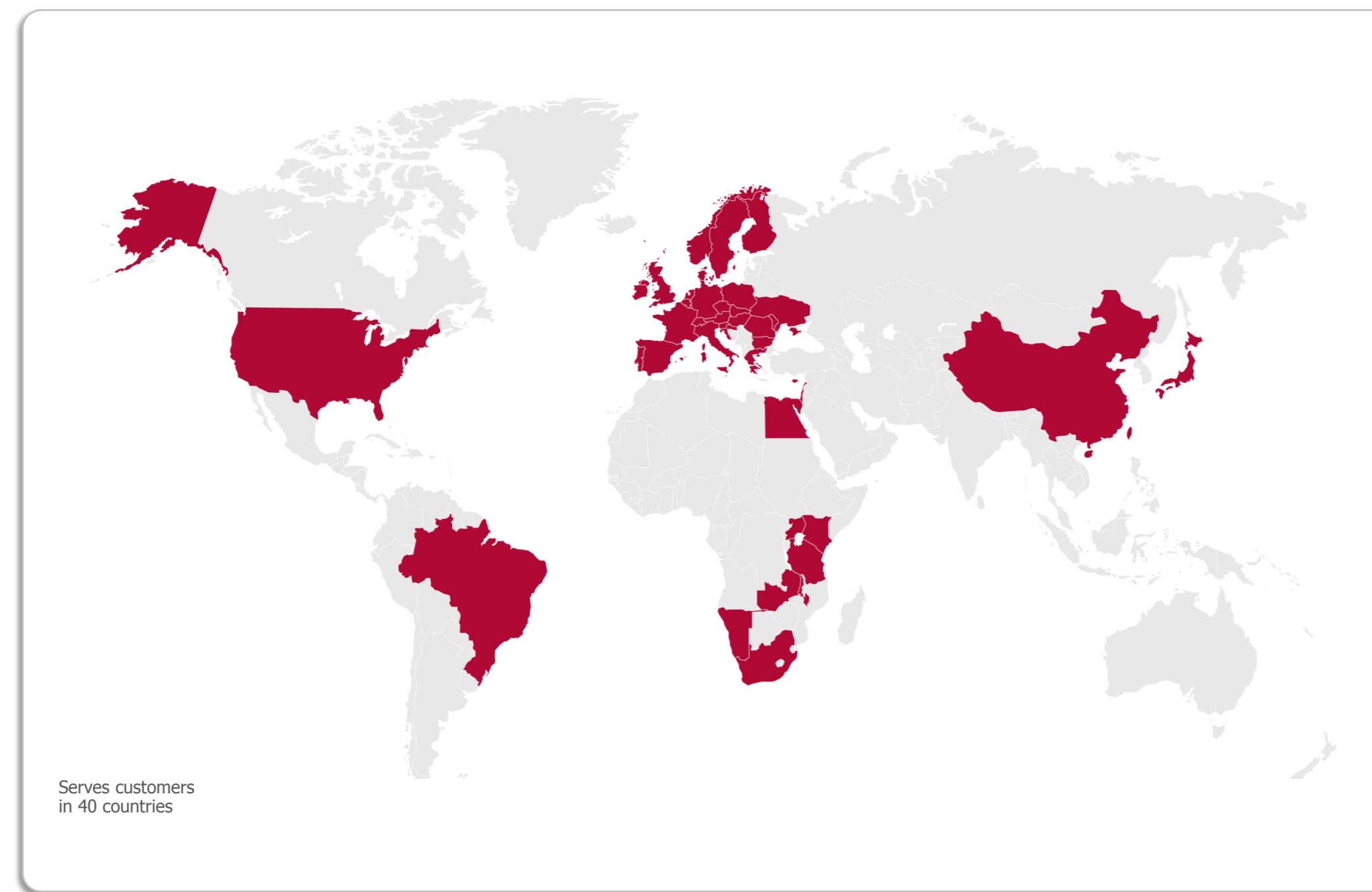
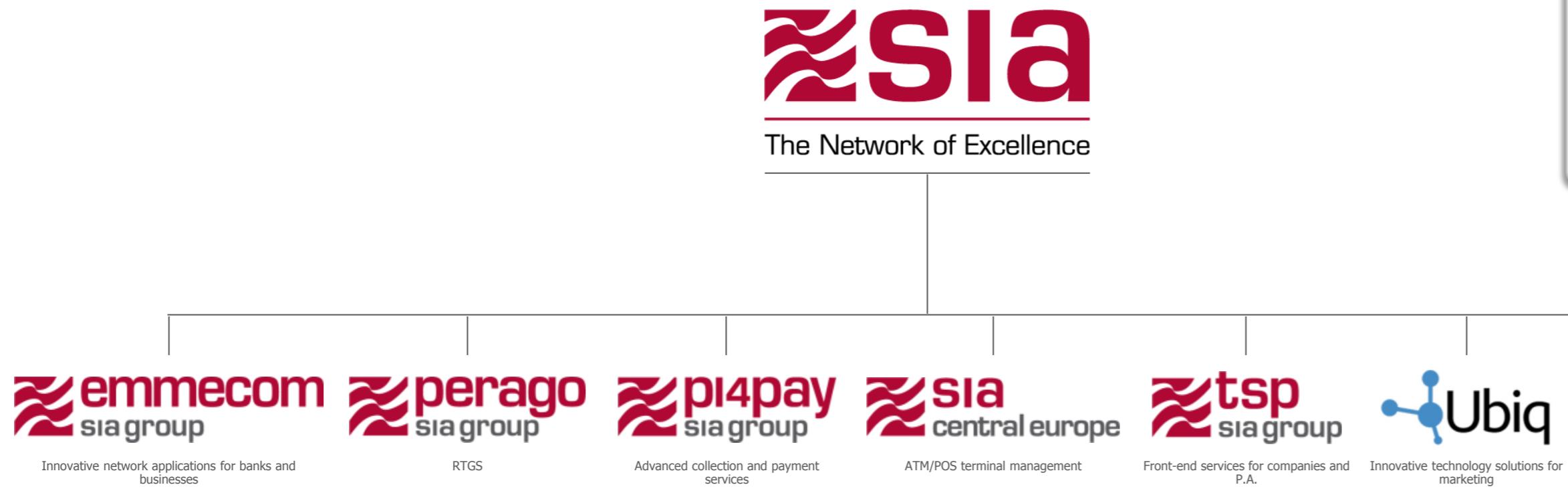
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# BPM Architectures at SIA

Emanuele Montrasi, Interoperability Payments Manager, SIA  
Stefano Marfella, Extra

# About SIA

## THE GROUP



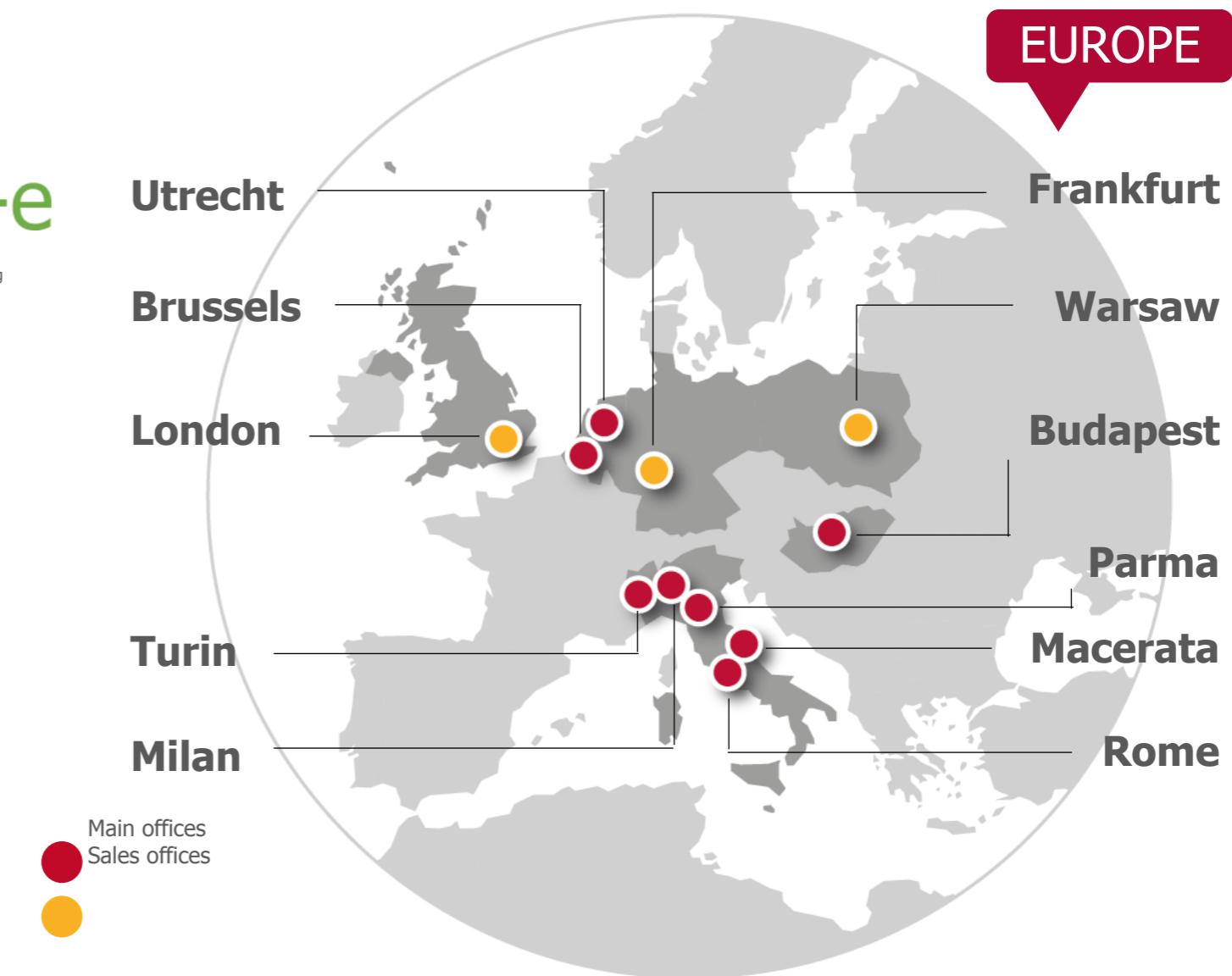
## BUSINESS HIGHLIGHTS



Founded in July 1977



European leader in the areas of payments, cards, network services and capital markets



# Full range of core services for each customer

## CENTRAL INSTITUTIONS



## FINANCIAL INSTITUTIONS



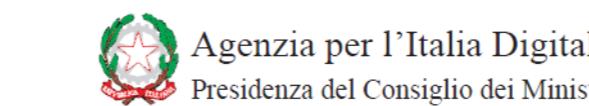
## CORPORATES



## NETWORK SERVICES

(Logical Network - Connectivity - Service Bureau)

## PUBLIC SECTOR BODIES



## CAPITAL MARKETS



# Old Pre-Billing Solution & Pain Point

- Mainframe Application
- Rules inside the code
- Developers bear the rule management process
- Integration of a small number of SIA services
- Different Data Bases for pre-billing system and business intelligence
- No authorizing process
- No simulation feature

# The Open Source Choice

- Drive for Application Modernization
- Opt for Red Hat BPM Suite (based on previous experiences with Red Hat products)
- Opt for the Red Hat Advanced Business Partner EXTRA



# extra

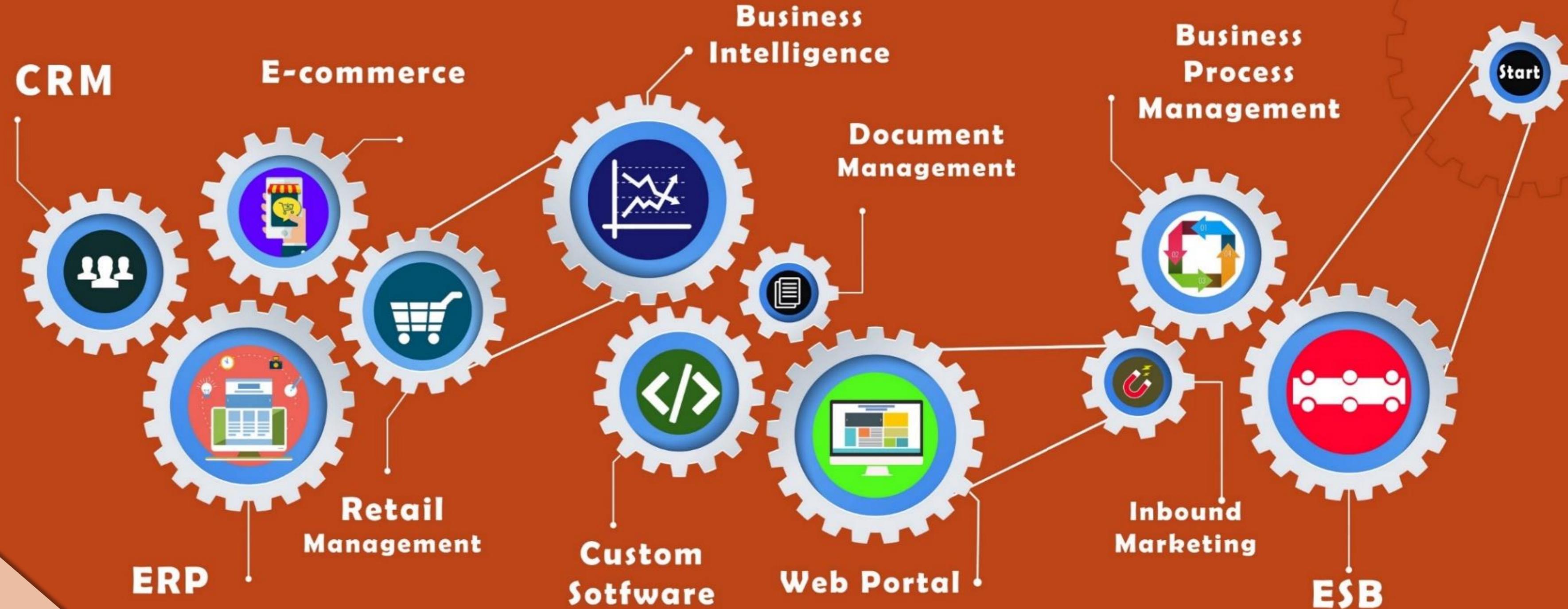
## Smart Solutions, Open Integrations



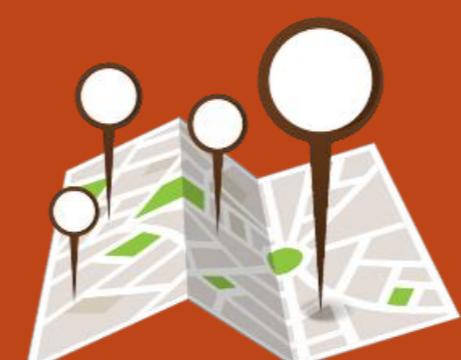
redhat.

**ADVANCED**

**BUSINESS PARTNER**



About 70 employees  
Graduates in computer engineering, Science, Business, Film production and ...

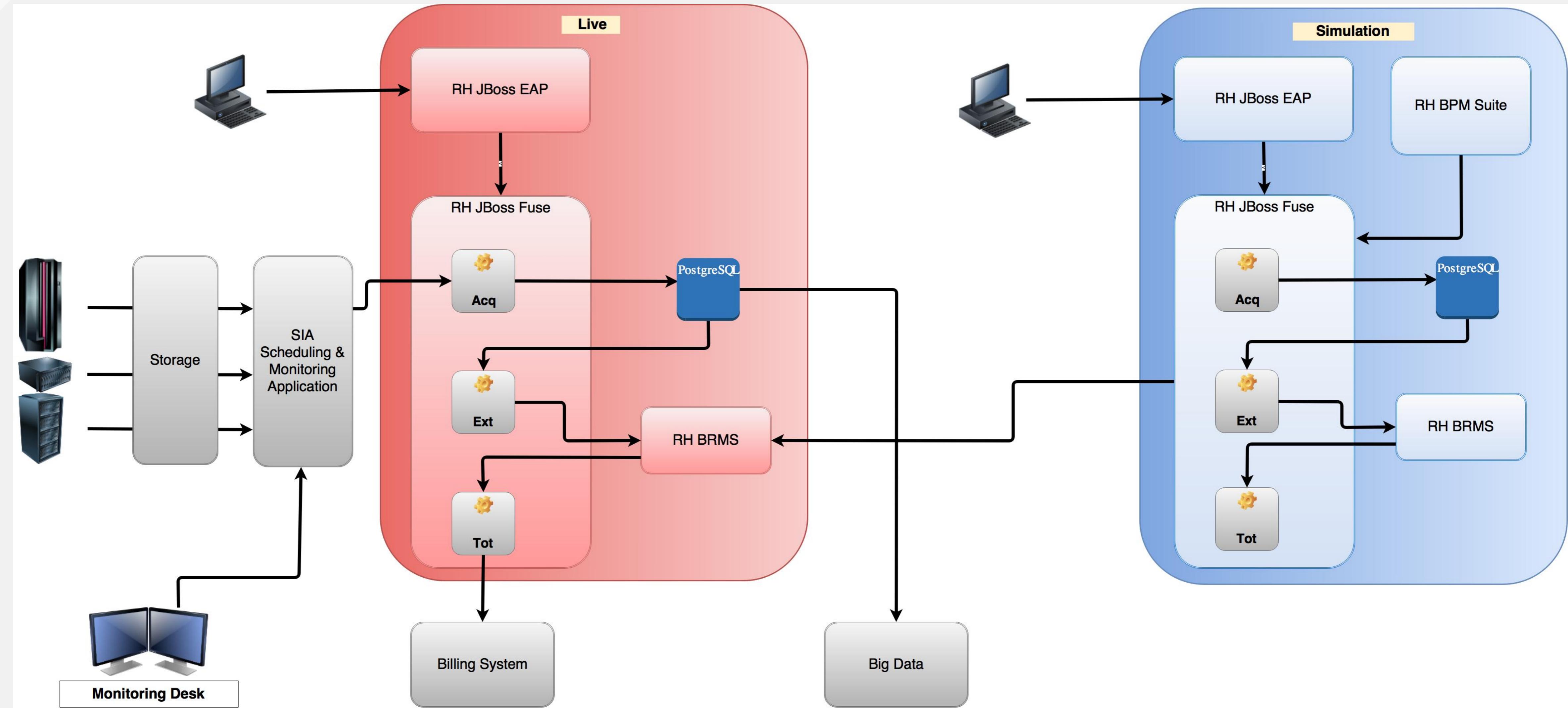


3 operating offices in Italy  
1 Office in London

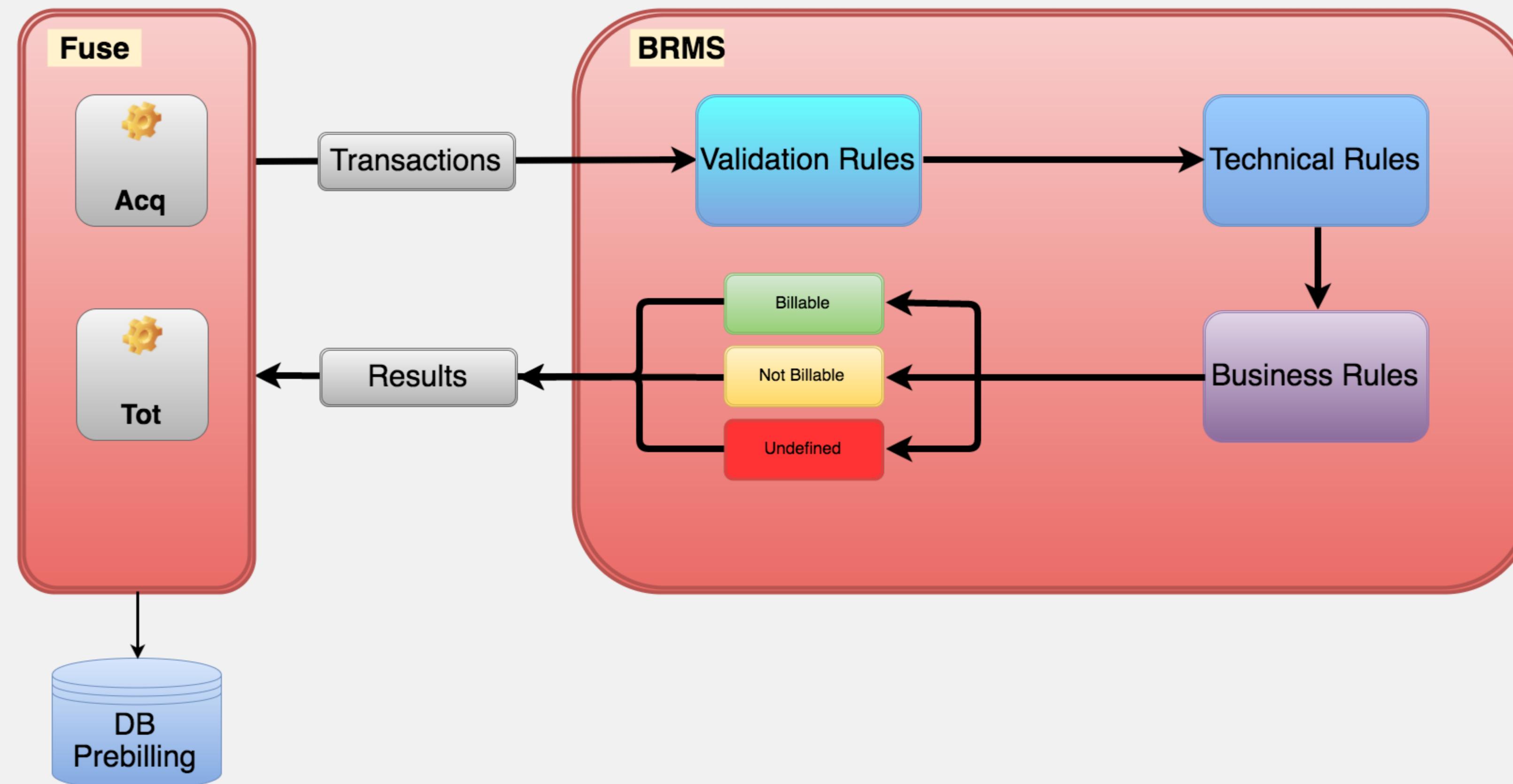


Over 300 projects worldwide in 11 countries

# Prebilling Process with Red Hat middleware

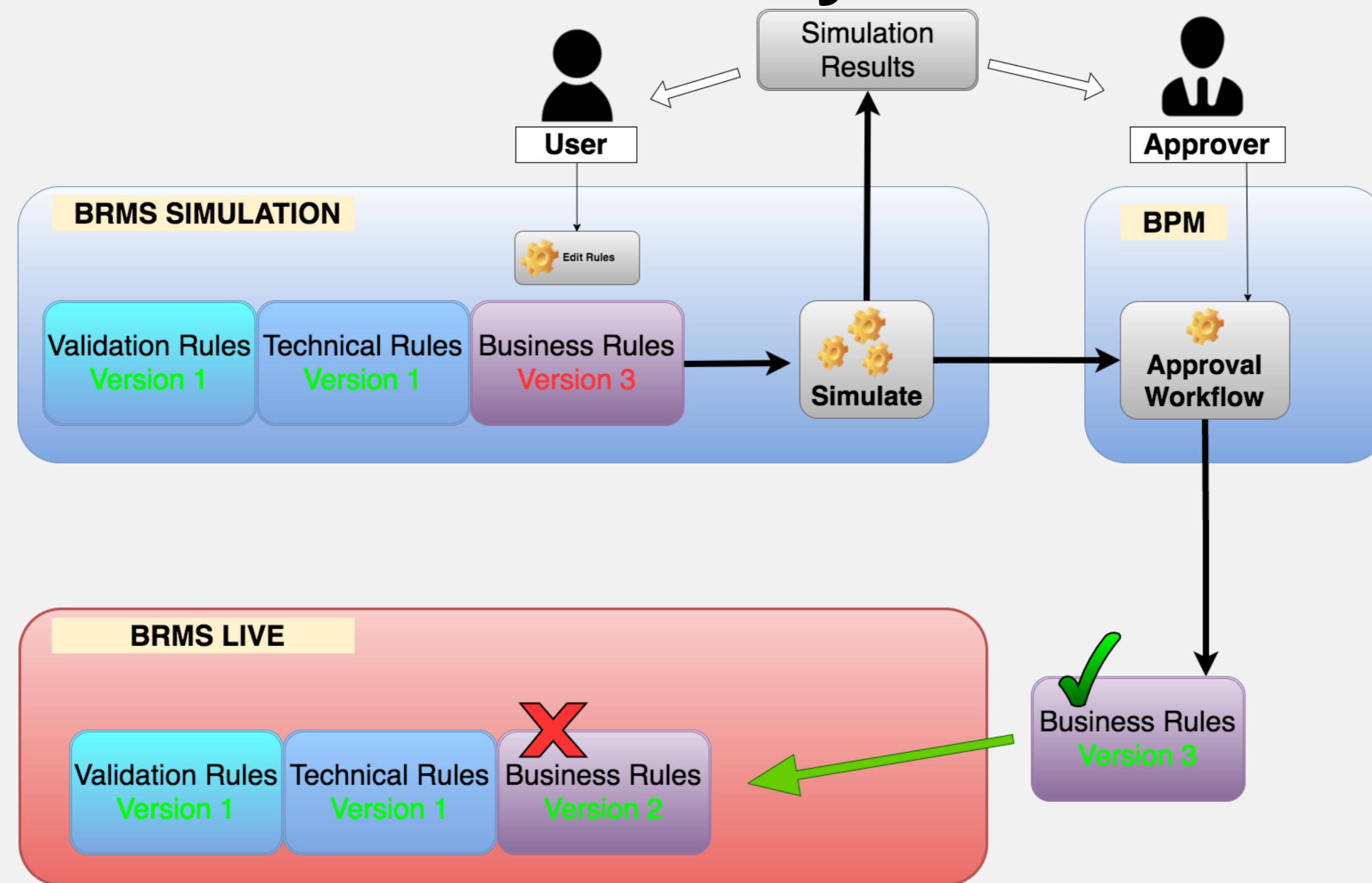


# BRMS Integration



- BRMS integration through web services
- BRMS as rule repository and rule engine

# Rule Continuous Delivery Process with BPM Suite



- The Authorizing Process at the end of the simulation phase directly promotes Business Rules from Simulation Environment to Live Environment creating a Hot Continuous Delivery Process

# Main Achievements

- Simulation System
- Rule Management Process
- Rule Versioning System
- Business Rules Hot Deployment
- Cross Platform Integration
- Cross Platform Bimodal Development

# Next Steps

- New Big Data from pre-billing DB
- Re-writing of old mainframe services
- Transferring of BPM Know-how to other authorizing processes



RED HAT  
**SUMMIT**

**LEARN. NETWORK.  
EXPERIENCE OPEN SOURCE.**